LIGHTNING SAFETY AWARENESS WEEK

Summer 2007

Lightning Safety Awareness Week is June 24-30, 2007

Governor Jon Huntsman, Jr. has declared June 24-30 as Lightning Safety Awareness Week in Utah, in conjunction with National Lightning Safety Awareness Week. The NOAA Lightning Safety Team, comprised of government and private sector businesses, will lead the lightning safety campaign, with participation from various state and local agencies and businesses. This campaign is designed to lower lightning death and injury rates and America's vulnerability to one of nature's deadliest hazards.

During the past 30 years, lightning has killed an average of 66 people per year in the United States. In Utah, lightning has claimed the lives of 60 people since 1950, more than any other thunderstorm related hazard. In August of 2005, a lightning strike claimed the life of an Eagle Scout and injured 3 other scouts in the Uinta Mountains.

Because lightning usually claims only one or two victims at a time, and because lightning does not cause the mass destruction left in the wake of tornadoes or hurricanes, lightning generally receives much less attention than the more destructive weather-related killers.

During Lightning Safety Awareness Week, we hope you will learn more about lightning risks and how to protect yourself and your loved ones!

Daily news releases and statements will be issued and broadcast on NOAA Weather Radio All Hazards during Lightning Safety Awareness Week. Warning Coordination Meteorologists and Public Information Officers serving your community will be available for interviews and questions.

Check out the National Lightning Safety Awareness Week web site at http://www.lightningsafety.noaa.gov/week.htm.

The Governor's Declaration and this publication are available on-line at http://homelandsecurity.utah.gov, http://www.wrh.noaa.gov/slc/wxsafety, and http://www.crh.noaa.gov/gjt/?n=lightningawareness.

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Contacts

NWS Salt Lake City
Kevin Barjenbruch, WCM
801-524-5113
Kevin.Barjenbruch@noaa.gov

NWS Grand Junction
Jim Pringle, WCM
970-243-7007 x726
James.Pringle@noaa.gov

Utah Department of Public Safety - Division of Homeland Security
Brian Hyer, PIO
801-538-3738
bhyer@utah.gov

American Red Cross
David Neale
Emergency Services Director
801-323-7002
dneale@utahredcross.org

Lightning Safety for Kids

Leon's Lighting Safety Game and other fun lighting safety activities are available on NOAA's NWS Lightning Safety Kid's Page at: http://www.lightningsafety.noaa.gov/kids.htm.

The Science of Lightning

How Powerful is Lightning?
Each bolt of lightning can reach over five miles in length, soar to temperatures of approximately 50,000 degrees Fahrenheit, and contain 100 million electrical volts.

Lightning is a Random, Chaotic, and Dangerous Fact of Nature
At any given moment, there are 1,800 thunderstorms in progress somewhere on the earth. This amounts to 16 million storms each year! Lightning detection systems in the United States monitor an average of 25 million strokes of cloud-to-ground lightning every year!

Ice in the Cloud is Critical to the Lightning Process
In a thunderstorm, ice particles exist which vary in size from small ice crystals to larger hailstones. In the rising and sinking motions within the storm, collisions between the particles occur. This causes a separation of electrical charges. Positively charged ice crystals rise to the top of the thunderstorm, and negatively charged ice particles and hailstones drop to the middle and lower parts of the storm.

How Lightning Develops Between the Cloud and the Ground
A moving thunderstorm gathers another pool of positively charged particles along the ground that travel with the storm. As the differences in charges continue to increase, positively charged particles rise up taller objects such as trees, houses, and telephone poles. The negatively charged area in the storm will send out a charge toward the ground called a stepped leader. It is invisible to the human eye, and moves in steps of less than a second toward the ground. When it gets close to the ground, it is attracted by the positively charged objects, and a channel develops. You see the electrical transfer in this channel as lightning. There may be several return strokes of electricity within the established channel that you will see as flickering lightning.

Thunder
The lightning channel heats rapidly to 50,000 degrees Fahrenheit. The rapid expansion, then contraction of air in the lightning channel causes the thunder. Since light travels faster than sound in the atmosphere, the sound will be heard after the lightning. If you see lightning and hear thunder at the same time, that lightning is in your neighborhood!

Negative Lightning and Positive Lightning
Not all lightning forms in the negatively charged area low in the thunderstorm cloud. Some lightning originates in the cirrus anvil at the top of the thunderstorm. This area carries a large positive charge. Lightning from this area is called positive lightning and is particularly dangerous as it frequently strikes away from the rain core, either ahead or behind the thunderstorm.

Lightning Safety...Outdoors

Each year, about 400 children and adults in the U.S. are struck by lightning while working outside, at sports events, on the beach, mountain climbing, mowing the lawn, or during other outdoor activities. In addition to the average of 66 lives lost per year, several hundred more are left to cope with permanent disabilities. Many of these tragedies can be avoided. Finishing the game, getting a tan, or completing a work shift aren't worth the risk of death or a debilitating injury.

Lightning Facts

- **Lightning can strike as far as 10 miles away from any rainfall.**
- **You are in danger from lightning if you can hear thunder.**
- **Lightning injuries can lead to permanent disabilities or death.** On average, at least 10% of strike victims die; 70% of survivors suffer serious long term effects.

Lightning Safety Rules

- **Postpone activities promptly. Don't wait for rain.** Many people take shelter from the rain, but most people struck by lightning are not in the rain! Go quickly inside a completely enclosed building. If no enclosed building is convenient, get inside a hard-topped all-metal vehicle.
- **Be the lowest point. Lightning usually strikes the tallest object.** In the mountains if you are above the timberline, you **ARE** the highest object around. Quickly get below the timberline and get into a grove of small trees. Crouch down if you are in an exposed area.
- **Keep an eye on the sky.** Look for darkening skies, flashes of lightning, or increasing wind, which may be signs of an approaching thunderstorm.
- **Listen for the sound of thunder.** If you can hear thunder, go to a safe shelter immediately.
- **If you see lightning, hear a thunderstorm coming, or your hair stands on end, immediately suspend your game or practice and instruct everyone to go inside a sturdy building.** If no sturdy building is nearby, a hard-top vehicle with windows closed will offer some protection. The steel frame of the vehicle provides some protection if you are not touching metal.
- **Listen to NOAA Weather Radio**. Coaches and other leaders should listen for tone-alert warnings, as well as forecasts for thunderstorms, during practice sessions and games.
- **If you can't get to a shelter, stay away from trees.** If there is no shelter, crouch down in the open, keeping twice as far away from a tree as it is tall.
- **Avoid leaning against vehicles**. Get off bicycles and motorcycles.
- **Get out of the water. It's a great conductor of electricity.** Stay off the beach and out of small boats or canoes. If caught in a boat, crouch down in the center of the boat away from metal hardware. Swimming, wading, snorkeling, and scuba diving are NOT safe. Lightning can strike the water and travel some distance beneath and away from its point of contact.
- **Avoid metal!** Drop metal backpacks, stay away from clothes lines, fences, exposed sheds, and electrically conductive elevated objects. Don't hold on to metal items such as golf clubs, fishing rods, tennis rackets, or tools. Large metal objects can conduct lightning.
- **Move away from a group of people.** Stay at least several yards away from other people. Don't share a bleacher bench or huddle in a group.

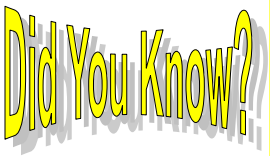
Safe Shelters and Indoor Lightning Safety

What is a Safe Shelter?
A house or other substantial building offers the best protection from lightning. For a shelter to provide protection from lightning, it must contain a mechanism for conducting the electrical current from the point of contact to the ground. On the outside, lightning can travel along the outer shell of the building or may follow metal gutters and downspouts to the ground. Inside a structure, lightning can follow conductors such as the electrical wiring, plumbing, and telephone lines to the ground.

Avoid Unsafe Shelters!
Unless specifically designed to be lightning safe, small structures do little, if anything, to protect occupants from lightning. A shelter that does not contain plumbing or wiring throughout, or some other mechanism for grounding from the roof to the ground is not safe.

How Lightning Enters a House or Building.
There are three main ways lightning enters homes and buildings: (1) a direct strike, (2) through wires or pipes that extend outside the structure, and (3) through the ground. Regardless of the method of entrance, once in a structure, the lightning can travel through the electrical, phone, plumbing, and radio/ television reception systems.

Stay Safe While Inside!
Avoid contact with corded phones and electrical equipment. Phone use is the leading cause of indoor lightning injuries in the United States.
If you plan to unplug any electronic equipment, do so well before the storm arrives.
Avoid contact with plumbing. Do not wash your hands, do not take a shower, do not wash dishes, and postpone doing laundry.
Stay away from windows and doors, and stay off porches.
Do not lie on concrete floors and do not lean against concrete walls. Concrete floors and walls usually contain rebar or other reinforcing metal.



Counting the number of seconds between a flash of lightning and the next clap of thunder, then dividing this number by 5, will determine the distance to the lightning in miles.

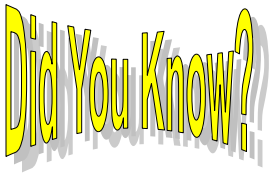
30/30 Lightning Rule: *If after seeing lightning, you cannot count to 30 before hearing thunder, take shelter...stay indoors for 30 minutes after hearing the last clap of thunder.*

NOAA Weather Radio All Hazards...Voice of the National Weather Service

Keep ahead of severe weather by listening to NOAA Weather Radio All Hazards (NWR) for the latest outlooks, watches, and warnings. In addition to routine broadcasts, the Specific Area Message Encoding (SAME) feature of NWR activates the Emergency Alert System (EAS). EAS is used to provide notification of emergencies to the public.

For more information, including links to NWR transmitters in your area, visit the NWR Web Site at http://www.nws.noaa.gov/nwr.

For special needs NWR information, visit http://www.nssl.noaa.gov/~wood/NWR/spc-nds-nwr.



Special needs NWRs, designed to meet the needs of the deaf and hard-of-hearing are available.

Lightning and Wildfires

Although wildfires are not an actual weather phenomenon, wildfires are directly related to lightning and other weather elements.

The wildfire threat typically increases in early to mid June across southern Utah and by early July across the northern sections of the state...then usually remains high until around Labor Day. Depending on climatic conditions, the time of year for the peak wildfire threat can be about a month earlier or later than normal.

Utah averages about 1,900 wildfires each year. About two thirds of all wildfires in the Eastern Great Basin are ignited by lightning. Many of these lightning caused wildfires occur in the absence of rain, and are the result of what is referred to as "dry thunderstorms."

Lightning which strikes the ground can be divided into two categories; negative and positive strikes, depending on the ionic source region of the thunderstorm. The negative strikes are far more common than positive strikes. The positive strikes, however, are more intense and have a longer duration than the negative strikes and are more likely to ignite a fire. Lightning detection technology provides land managers, firefighters, and weather forecasters with the ability to identify the general location and charge category of each lightning strike.

Lightning is often accompanied by strong winds associated with thunderstorms. These winds can quickly turn smoldering organic material into a raging fire. Thunderstorm winds tend to be erratic in direction and speed, posing one of the greatest dangers to firefighters.

National Weather Service forecasters help land managers and firefighters by producing fire weather forecasts on a daily basis during the warm season. "Spot" fire weather forecasts are also provided for those who work on prescribed burns or specific wildfires. Forecasters also issue Red Flag Warnings for use by land managers when the combination of dry vegetation and critical weather conditions will result in a high potential for the development and spread of wildfires. Land managers, in turn, typically inform the general public of the fire danger in national parks, forests, and other public lands.

During periods of extreme fire danger in forests and rangelands…

- **Avoid being in areas where you might become trapped by a wildfire.**
- **Do not use matches or anything else which could ignite a fire.**
- **Make sure that hot parts of motorized equipment, such as mufflers, are not allowed to come in contact with dry grasses or other potentially flammable material.**
- **If you become trapped or cut off by a wildfire, seek shelter in areas with little or no fuel, such as rock slide areas or lakes.**

In the Wildland/Urban interface

- **Maintain a defensible/survivable space using fire-resistant building materials and landscaping techniques**.
- **Have evacuation procedures in place**.

For more information on wildfires and fire safety, check out the following web addresses: http://fire.boi.noaa.gov, http://www.wrh.noaa.gov/slc/fire, and http://www.crh.noaa.gov/gjt/?n=firewx.

Internet Sites

National Oceanic and Atmospheric Administration (NOAA)
http://www.noaa.gov

NOAA's National Weather Service
http://www.nws.noaa.gov

National Lightning Safety Awareness Week Web Site
http://www.lightningsafety.noaa.gov/week.htm

NOAA's NWS Salt Lake City, UT
http://www.wrh.noaa.gov/slc

NOAA's NWS Grand Junction, CO
http://www.crh.noaa.gov/gjt

NOAA's NWS Office of Climate, Water and Weather Services
http://www.lightningsafety.noaa.gov

National Interagency Fire Center Prevention & Education
http://www.nifc.gov/preved/index.html

Federal Emergency Management Agency
http://www.fema.gov

Utah Department of Public Safety's Division of Homeland Security
http://homelandsecurity.utah.gov

American Red Cross
http://www.redcross.org/services

Utah State Parks and Recreation
http://www.stateparks.utah.gov

NOAA Weather Radio All Hazards
http://www.nws.noaa.gov/nwr

NOAA's NWS Storm Prediction Center
http://www.spc.noaa.gov

NOAA's NWS Climate Prediction Center
http://www.cpc.noaa.gov

Utah Department of Transportation
http://www.udot.utah.gov

CommuterLink
http://www.commuterlink.utah.gov

NOAA's National Weather Service
Salt Lake City

2242 West North Temple
Salt Lake City, UT 84116
801-524-5133

NOAA's National Weather Service
Grand Junction

792 Eagle Drive
Grand Junction, CO 81506
970-243-7007